

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

Applicants are submitting the present Amendment without prejudice to the subsequent prosecution of claims to some or all of the subject matter which might be disclaimed by virtue of this response (although none is believed to be), and explicitly reserve the right to pursue some or all of such subject matter, in Divisional or Continuation Applications.

I. CLAIM STATUS AND AMENDMENTS

Claims 44-68 were pending in this application when last examined and are subject to restriction.

Claims 55, 58, 59, 61, 63, 64, 65, and 68 are amended. Support can be found in the claims as filed.

No new matter has been added by the above claim amendments.

Claims 56, 57, 60, 62, and 66-67 have been cancelled without prejudice or disclaimer thereto. Applicants reserve the right to file a continuation or divisional application on any cancelled subject matter.

Claims 44-55, 58, 59, 61, 63-65, and 68 are pending upon entry of this amendment.

II. RESPONSE TO RESTRICTION

In response to the Restriction Requirement on page 2 of the Office Action, Applicants hereby provisionally elect, with traverse, the invention of Group III, claims 55-68, as amended, concerning a method for preparation of transgenic plants having long lasting resistance against Geminiviruses. Applicants further elect, with traverse, C1/AL1/AC1 gene of claim 61, the gene nucleotide sequence of SEQ ID NO: 8, and the corresponding polypeptide of SEQ ID NO: 9.

In response to the Election of Species Requirement on page 3 of the Office Action, Applicants hereby elect, with traverse, Begomovirus of amended claim 58 and Begomovirus TYLCSV of amended claim 59 as the species for examination on the merits. It is noted that claim 60 has been cancelled. It is respectfully submitted that at least claims 55-68 are readable thereon.

Applicants respectfully traverse the above-noted requirements for the following reasons.

Applicants note that the unifying feature of the invention is the introduction of silent point mutations derived by geminiviruses and distributed in such a way that the length of the regions with continuous homology between the new mutated sequence and the original one is below or equal to 8 nucleotides, or below or equal to 5 nucleotides. This method allows one skilled in the art to obtain a new nucleotide sequence having the same codifying capability of the original sequence, but having

different nucleotide sequence in such a way that it is an ineffective target of the gene silencing induced by the virus, thereby producing a long lasting resistance.

It is respectfully submitted that this feature has to be present in the product claim 44 and in the method claims 55 and 56.

The Office indicated that the unifying technical feature of the groups I-III is a generic Geminivirus mutated gene, and geminivirus mutated sequences are already known in the art, for instance, in van WEZEL et al. 2002. Applicants respectfully traverse this position.

While it is correct that some geminivirus mutated sequences have been described, even before van WEZEL et al., a mutagenesis uniformly distributed in a gene sequence in order to avoid the silencing of the viral transgene induced by the infecting geminivirus has never been described before the present invention.

Further, it is noted that the present application is not directed to, nor does it not claim, a generic site-specific mutagenesis on geminivirus sequences. On the contrary, the present application claims only a specific typology of mutations, that consist of silent point mutations distributed in such a way that the length of the regions with continuous homology between the new mutated sequence and the original one is below or equal to 8 nucleotides, and preferably below or equal to 5 nucleotides.

It is respectfully submitted that van WEZEL et al. (2002) does not disclose or suggest the above-noted unifying feature of the invention.

Instead, van WEZEL et al. describe the effect of some point mutations within a potential "zinc-finger" motive and in four potential sites of phosphorylation of the C2 protein of begomovirus Tomato yellow leaf curl China virus.

In addition, Applicants do not find any relation between the disclosure in van WEZEL et al. and the present invention for the following reasons:

(1) C2 protein and the codifying sequence thereof in van WEZEL et al. do not confer virus resistance, that is the essential feature of the present invention (method of claim 55);

(2) the mutations according to van WEZEL et al. are point, sporadic and specific mutations, but they do not fulfill the principle according to which the sequence has one different nucleotide each 5 or 8 nucleotides according to the present invention. In addition the mutations operated by van WEZEL et al. are present only in the central part of the codifying sequence, not along the entire sequence according to the present invention. The van WEZEL et al. mutations have been introduced for mutating precise amino acids, such as cysteine, serine, threonine or tyrosine, in specific way and singularly.

(3) the mutants according to van WEZEL et al. have been tested for having biological characteristics totally different in

comparison to virus resistance, interference in viral replication, effectiveness in avoiding the silencing of the viral transgene in the case the transgenic plant were inoculated with the homologous geminivirus.

For these reasons, it is respectfully submitted that van WEZEL et al. does not disclose or suggest the special technical feature of the claims. Consequently, Applicants respectfully submit that the present has unity of invention.

Applicants further submit that the method claim for obtaining transgenic plants having long lasting resistance against geminivirus should not be restricted only to TYLCSV and SEQ ID Nos 8 and 9. In this regard, the method according to the invention can be used to all Begomovirus that can infect tomato. In fact, as it is well known, that proteins derived from geminivirus ALL/C1/AC1 gene are able to interfere with the replication of the respective virus. However, the resistances obtained by the expression of protein derived by the ALL/C1/AC1 gene are not lasting because the viral transgene is silenced by the infecting virus (Lucioli et al., 2003, Journal of Virology). This has also been shown in TYLCV (Antignus et al., 2004, Annals of Applied Biology) or in ACMV (Sangarè et al., 1999, Molecular Biology Reports). Also, the method according to the present invention is independent from the sequence. In fact, it is applicable to all ALL/C1/AC1 geminivirus gene sequences and all the more reason it is applicable to the Begomovirus subclass that

infects tomato, as demonstrated with TYLCSV in the example according to the invention.

It is also respectfully submitted that, contrary to the Office's position, it would not constitute an undue burden to search multiple sequences in a single application given the present automated sequence searching technology.

Finally, it is important to note that the method for obtaining long lasting resistance against geminivirus according to the present invention is based on an innovative technology that allows a stable expression of the transgenic protein of viral origin. Therefore, the method according to the invention should not be confused with methods for obtaining resistance mediated by RNA (RNA silencing) and not by the protein, also if they use sequences derived from AL12/C1/A1 gene.

For these reasons, it is respectfully submitted that unity of invention exists since the corresponding special technical feature of the claims is neither disclosed or suggested in van WEZEL et al. Thus, Applicants respectfully submit that the Office's request for restriction is untenable and should be withdrawn.

Thus, kindly search and examine of all the claims in their full scope together in this application as the inventions of Groups I-III have unity of invention.

In the event that the Office disagrees with the traversal and maintains the requirement, then kindly consider the

possibility of rejoinder of the non-elected invention, upon a determination of allowance of the elected invention, per U.S. rejoinder practice.

In addition, please consider the possibility of rejoinder of the non-elected subject matter, upon a determination of allowance of the election invention, per U.S. practice and M.P.E.P. § 821.04.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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